Economy and Environment Program
for Southeast Asia
Tanglin PO Box 101
Singapore 912404
Phone: (65) 6831-6854
Fax: (65) 6235-1849
E-mail: eepsea@idrc.org.sg
Web site: www.eepsea.org

RESEARCH REPORT

No. 2005-RR12

Economic Valuation of Cultural Heritage: A Case Study of Historic Temples in Thailand

Udomsak Seenprachawong
School of Development Economics
National Institute of Development Administration
Serithai Rd, Bangkok 10240
Thailand
(udomsak.s@nida.nida.ac.th)

This study looks at how conservation of Thailand's ancient temple heritage might be financed. Using information from contingent valuation and choice modeling exercises involving 500 households in Bangkok, it assesses how much Thais would be willing to pay for a conservation program to safeguard ten at-risk temple sites. It also looks at the main elements of such a temple conservation program to see which are most highly prized.

It finds that, on average, individuals would be willing to make a one-time payment of 200 Baht (USD5.30), either as a tax surcharge or as a voluntary donation to finance the conservation program. Extrapolating these results nationally, this would generate more than enough money to finance a temple conservation program. The study also proposes the main elements of a national program to preserve historic temples in Thailand. Local communities and the private sector (in regions where historic temples are located) are highlighted as the key players in any such initiative.

Published by the Economy and Environment Program for Southeast Asia (EEPSEA)
Tanglin PO Box 101, Singapore 912404 (www.eepsea.org)
tel: +65-6235-1344, fax: +65-6235-1849, email: eepsea@idrc.org.sg

EEPSEA Research Reports are the outputs of research projects supported by the Economy and Environment Program for Southeast Asia. All have been peer reviewed and edited. In some cases, longer versions may be obtained from the author(s). The key findings of most *EEPSEA Research Reports* are condensed into *EEPSEA Policy Briefs*, available upon request. The Economy and Environment Program for Southeast Asia also publishes *EEPSEA Special Papers*, commissioned works with an emphasis on research methodology.

Library and Archives Canada Cataloguing in Publication

Seenprachawong, Udomsak
Economic valuation of cultural heritage : a case study of historic temples in Thailand / Udomsak Seenprachawong.

(Research report, 1608-5434 ; 2005-RR12)
Includes bibliographical references: p.
Co-published by: International Development Research Centre.
ISBN 1-55250-233-3

1. Temples--Conservation and restoration--Thailand—Bangkok—Public opinion .
2. Cultural property--Protection--Thailand—Bangkok—Public opinion .
3. Temples--Conservation and restoration--Economic aspects—Thailand--Bangkok.
4. Temples, Buddhist--Conservation and restoration--Thailand--Public opinion.
I. International Development Research Centre (Canada)
II. Economy and Environment Program for Southeast Asia
III.Series: Research report (Economy and Environment Program for Southeast Asia) ; 2005-RR12.

NA6021.S43 2006 363.6'909593 C2006-980166-5

Economic Valuation of Cultural Heritage: A Case Study of Historic Temples in Thailand

Udomsak Seenprachawong

February, 2006

Comments should be sent to: Udomsak Seenprachawong, School of Development Economics, National Institute of Development Administration, Serithai Rd. Bangkok, Thailand 10240.

Tel: 662-727-3198 Fax: 662-375-8842 E-mail: udomsak.s@nida.nida.ac.th

---

EEPSEA was established in May 1993 to support research and training in environmental and resource economics. Its objective is to enhance local capacity to undertake the economic analysis of environmental problems and policies. It uses a networking approach, involving courses, meetings, technical support, access to literature and opportunities for comparative research. Member countries are Thailand, Malaysia, Indonesia, the Philippines, Vietnam, Cambodia, Lao PDR, China, Papua New Guinea and Sri Lanka.

EEPSEA is supported by the International Development Research Centre (IDRC); the Swedish International Development Cooperation Agency (Sida); and the Canadian International Development Agency (CIDA).

EEPSEA publications are also available online at http://www.eepsea.org.

ACKNOWLEDGEMENTS

This project was generously funded by the Economy and Environment Program for Southeast Asia (EEPSEA).

I am grateful to Dr. Dale Whittington and Dr. Wiktor Adamowicz for their valuable advice and comments. My gratitude towards Dr. David Glover is unlimited – I wish to thank him not only for the friendship, but also for the support he provided.

I would also like to thank my survey team and research assistants, including Maneerat Panya, Pitchana Hansupichon, Donnapa Maneeyom, Pannee Tiwawong, Nattawut Na Lumpoon, and Punlapa Suanmala.

Finally, I appreciate the support of the residents of the Bangkok Metropolitan Area for their kind collaboration in providing useful information for this research.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ECONOMIC VALUATION OF CULTURAL HERITAGE: A CASE STUDY OF HISTORIC TEMPLES IN THAILAND

Udomsak Seenprachawong

ABSTRACT

The main purpose of this study was to elicit the value of restoring the historic temples in the central region of Thailand. A contingent valuation (CV) survey was carried out in January 2005. This valuation exercise is of interest for two reasons. Firstly, historic temples in the central region of Thailand are considered to be valuable cultural heritage in Thailand. The values of these historic temples can reasonably serve as a benchmark against which temples in other regions can be valued, especially since this is the very first contingent valuation study on cultural heritage in Thailand. Secondly, by its design, this study provides information on the methodological aspects of the CV method. This research explored the question of whether respondents are able to identify their values for two temples versus their values for ten temples. It was found that respondents did pass this scope test. A test on statistical significance confirmed a highly significant difference, indicating that respondents will pay more for a greater number of temples. Another methodological issue dealt with in this study was whether it matters if the proposed payment is collected in the form of income tax or in the form of a donation to a fund designed to restore historic temples. A test on statistical significance showed that there was negligible difference between the two, indicating that it does not matter if the payment vehicle is in the form of income tax or a donation. It was found that an individual is willing to pay 214 Baht[1] in a one-time income tax surcharge or 243 Baht as a voluntary donation to finance the preservation program of ten historic temples. Moreover, the results of the choice experiment showed that Thai people prefer a preservation program for temples of architectural and historical importance.

1.0 INTRODUCTION

1.1 Background

The cultural heritage of Thailand, if carefully preserved and protected, can contribute to the country's economic growth, meeting the needs and interests of poor communities and the broader society. Heritage can be a "development asset"— a form of cultural capital that can provide employment, generate income, and mobilize communities to alleviate poverty. Economic and social development can put cultural capital at risk, but it can also create opportunities for increasing that capital. This is of particular concern in the central region of Thailand. Particularly since the 1970s, the people here have witnessed tremendous changes in industrial growth and an expansion

[1] 40 Baht = 1 USD

of dwelling areas not experienced by earlier generations. This has given rise to a movement promoting greater care for the local environment. This trend has become common all over the central region and a major part of Thailand as a whole, and with it, a growing appreciation by Thais of their historic architecture and aesthetic value which had hitherto been ignored.

1.2 Definition of the Good

Initially, this researcher considered the different symbols/aspects of cultural heritage in central Thailand that ought to be preserved, such as temples, historic wooden houses, and the traditional way of life. It was necessary, however, to narrow the focus of this study to one category of cultural heritage. It was decided that temples would be a better choice for research than historic wooden houses because they are less complicated in their functions and are also seen as a resource with more potential and value to the general public.

Historic temples in the central region are considered to be the finest examples of ancient cultural structures in Thailand. This study selected ten historic temples at risk of deterioration as the good to be valued. These are described briefly in Table 1.

Table 1. Description of ten historic temples

Temple Name	Location	Year Built (A.D.)
1) Indraram	Amphawa District, Samut Songkram Province	1757
2) Bangkaeyai	Amphawa District, Samut Songkram Province	1814
3) Klang	Muang District, Samutprakan Province	1756
4) Ubosataam	Muang District, Uthaitani Province	1781
5) Kiean	Wiseschaichan District, Angthong Province	1657
6) Chomprasart	Muang District, Samut Sakorn Province	1605
7) Taprakaohai	Muang District, Pitsanulok Province	1588
8) Yaitakinaram	Muang District, Nakonnayok Province	1780
9) Chalor	Bangguay District, Nonthaburi Province	1757
10) Amphawan	Banna District, Nakonnayok Province	1595

1.3 Objectives of the Study

The aim of this research is to conduct an economic valuation of the non-market benefits of a restoration program for historic temples in the central region of Thailand. The specific objectives are:

1) to investigate public perceptions of cultural heritage conservation in the central region of Thailand,

2) to estimate local people's willingness to pay for the restoration program of historic temples in the central region of Thailand, and

3) to analyze factors that influence the estimated benefits of temple restoration programs.

1.4 Issues in and Significance of the Study

Exposed to the outdoor environment, historic temples are subject to some degree of weathering damage. Serious deterioration is bad since there is a loss of aesthetic beauty and the degradation indicates a lack of appreciation or respect for the place of worship. This issue was explored in this study by asking respondents about their willingness to pay for the restoration of historic temples at risk. Owing to the historical importance of the temples, the Division of Natural and Cultural Heritage, under the Office of Natural Resources and Environmental Policy and Planning (ONREPP) requires this information to assess the non-market benefits of preserving these temples, especially those in the Samut Songkram Province. Without a reliable measure of willingness to pay, it is likely that financial support for a particular activity may be under-provided by the government, thus leading to a loss of welfare to society.

This paper is divided into five sections. The first section covers the introduction and also specifies the objectives of the study. The second section presents literature reviews of economic valuations done in cultural heritage studies. Section 3 elaborates on the valuation approach taken in this study while Section 4 provides empirical findings and results. Discussions and conclusions are presented in section 5.

2.0 LITERATURE REVIEW

People derive many types of benefits from the preservation of historic temples. If they visit a temple, they may experience 'use benefits' in the form of educational and aesthetic gains. Even if they do not visit a particular temple, they may derive benefits from its preservation by knowing that other people can visit it. In both cases, it is expected that the economic value is primarily derived from human use of the resource now and in the future. The value to society of preserving a temple is the sum of the individual willingness-to-pay (WTP) of all members of society. In the case of publicly-owned resources, observed maintenance expenditures are not a valid indicator of the benefits people derive from the quality of the resource that is being preserved. There are few studies that have estimated WTP for preserving cultural resources. Three were conducted in Europe, one in North Africa, and one in North America over the last ten years. Navrud and Strand (2002) estimated average individual WTP values for a reduction in air pollution-related damage to the Nidaros Cathedral in Tronhiem Norway of USD 51, for a one-time payment. They surveyed visitors to the Cathedral who were

more likely to have higher values for preserving the cathedral than non-visitors, but found that passive use motivations tended to be more important to the respondents than personal use reasons. Passive use is the value that people place on the existence of cultural heritage. Personal use is the value people place on the cultural heritage because they make use of it in some way.

Willis (1994) assessed the amount individuals would voluntarily contribute when visiting a Cathedral where no charge is made for entry. The contingent valuation method (CVM) was used to estimate the maximum individuals would be willing to pay if any charge was imposed. The study adopted an open-ended WTP approach. The respondents were asked what they had contributed voluntarily before being asked to state their maximum WTP. Payment cards were employed to elicit the size of any voluntary donation for visiting the Cathedral, and to ascertain the maximum amount the individual would be willing to pay as an entry charge to gain access to the Cathedral. Overall, the mean stated WTP was 77 pence.

Garrod et al. (1996) used a CVM survey to investigate public preferences for the renovation of historic buildings in the Grainger town area of Newcastle-upon-Tyne in England. Respondents were asked how much they would be willing to pay in extra council taxes towards the renovation and restoration of these buildings, and how they would like this money to be allocated across different areas of the town. In general, the local people had a strong preference for renewing historic areas and they preferred to contribute towards the improvement of the most degraded areas. The results showed that the mean WTP was 13.76 pounds, with a median of 10.00 pounds.

Carson et al. (1997) estimated the value of rehabilitating the Fes Medina in Morocco. A survey of 600 visitors was designed to represent visitors, both tourists and those visiting for business or other purposes. Use and non-use values of public goods were quantified in terms of willingness to pay for specified improvements. Respondents were presented with information about the current condition of the Medina and told that rehabilitation would accomplish three things: to improve the Medina's appearance by repainting and cleaning up buildings, streets, infrastructure, public spaces, and monuments; to preserve the Medina's traditional character and cultural heritage for future generations; and finally, to ensure that the Medina would continue to be a productive and vibrant living city. To help pay for the proposed project, visitors would be charged a special fee when they registered at their hotel. Visitors to Fes Medina were found to be willing to pay USD 70 each for the project. Other visitors to Morocco were willing to pay USD 30 each.

Morey et al. (1997) developed and tested a valuation approach for a reduction in damage to marble monuments caused by air pollution in Washington D.C. The study assessed the amount of a one-time payment individuals were willing to contribute to the Marble Monument Preservation Trust. The pair-wise elicitation format was selected for the study since it has many desirable features. It easily accommodated multiple quantities and prices without raising the objection that respondents would consider only their most preferred choice, and also included follow-up questions. The result was that there were minimal refusals (to pay), inconsistencies or negative comments in the respondents' responses to the pair-wise choices.

Group interviews were conducted in the areas of Philadelphia and Boston Metropolitan Area. The results showed that, on average, households in these areas were

willing to make a one-time payment of USD 33 to USD 69, depending on the level of preservation, to slow down the deterioration rate of marble monuments in Washington D.C.

These previous valuation studies suggest that WTP values for cultural resources are measurable and that passive-use value is potentially more important than direct-use value. Their usefulness for valuing cultural resources in Thailand is, however, limited because they cannot be transferred to the current study, and because the goods presented in those studies are different from that valued in this study.

3.0 VALUATION APPROACH

The restoration of historic temples may generate many economic benefits. The total economic value of a historic temple is the sum of all use benefits derived from it, plus any non-use benefits which it may generate. Use benefits arise either directly or indirectly from an individual's use of the temple, while passive/non-use benefits are generated by an individual's knowledge that a temple is being preserved. Passive/Non-use benefits may be classified as the sum of option values and existence values. Option value is the value that people place on the cultural heritage for the benefit of their own future use. Existence value is the value that people place on the cultural heritage for the benefit of other people.

In the exploratory surveys, respondents were asked to rate several reasons why temples were important. It was found that respondents tended to rate the importance of reasons related to passive values more highly than those related to direct-use values. These findings led us to conclude that a stated preference method would be preferable because it would estimate all the benefits including both direct and passive use ones (Total value is divided into use value: direct use value and indirect use value, and passive use value: option value and existence value). The revealed preference method using, for example, the travel cost models, would be difficult to implement since visits to temples often occur during trips made for other reasons, meaning that travel costs would need to be allocated across destinations or reasons for taking the trips. The exploratory results indicated that a general population survey (i.e. a survey on visitors and non-visitors) would provide more comprehensive information than a survey of visitors to the temples because visitors and non-visitors might have different preservation values.

A preliminary survey was carried out in December 2003 to see what Thais think about preservation. It turned out that "Thais prefer a high degree of preservation of historic temples for an indefinite period rather than merely slowing the deterioration of these temples". In this study, the "good" was described as preserving the temples at a high level indefinitely. The survey design used in this study consisted of a contingent valuation method (CV) and a choice experiment (CE). In particular, three different versions of the survey were administered to different sub-samples of the population as follows:

1) Contingent valuation of ten temples (sample size of 280). This version elicited the value of preserving ten temples. Half of the respondents were asked for a one-time income tax surcharge and the other half for a one-time donation to the trust fund.

2) Contingent valuation of two temples (sample size of 240). This version elicited the value of preserving two temples. Half of the respondents were asked for a one-time income tax surcharge and half for a one-time donation to the trust fund.

3) Choice experiment (sample size of 120). This version elicited the value of each preservation program attribute.

3.1 Survey Instrument

This study was designed to investigate the preferences of individuals in the Bangkok Metropolitan Area (BMA) towards the restoration of historic temples in the central region of Thailand. Specifically, it sought to determine how much they would be willing to pay for this to be achieved. The WTP values in this CV survey refer to those of the individual respondent. Written and pictorial information describing the current state of historic temples at risk in the central region of Thailand were provided. This was followed by a description of the proposed management program to restore these temples. Photographs were used to illustrate the restoration program. Finally, respondents were asked whether they were willing to pay a one-time increase in income tax (or voluntary contribution) towards the restoration of historic temples and informed at the same time that the amount of money collected would be matched by external funding by UNESCO. Respondents who were not willing to pay anything were asked to state their reasons. The questionnaire also included extensive sections with attitudinal and demographic questions.

3.2 Sample Selection

Ideally, the study should have obtained WTP information from a randomly drawn sample of the Thai population because it is the population of interest when one considers the benefits of restoration programs for historic temples. Realistically, however, the sample frame needed to be limited to a smaller, more easily accessible section of the population.

It was decided to conduct the survey in the BMA because it offered logistical advantages, and residents in BMA could be assumed (based on general income and education levels) to have knowledge and attitudes that would be representative of other provinces in the central region of Thailand. The CV and the CE interviews were conducted in person. The number of households in the BMA was 1,703,128. With the help of the National Statistical Office, a stratified random sample was obtained from the Socio-Economic Status Survey population in BMA. BMA is divided into 48 strata. Each strata is homogenous in the sense that it belongs to a specific district which includes similar surrounding environments. The 48 strata were used to select a list of 800 households for the CV survey and a further list of 150 households for the CE survey. A simple random sample of 10-25 households was chosen from each stratum. For a proper comparison with the voluntary payment vehicle, this study screened out households that did not pay income tax (approximately 18%) by inserting an income tax payment section in the questionnaire.

Three focus group sessions were conducted: 1) with the general public at Chulalongkorn University, 2) with graduate students at the National Institute of Development Administration (NIDA), and 3) with researchers at the Thailand Development Research Institute (TDRI). The aim of the focus group sessions was to develop and test alternative approaches for defining the good, and developing the

valuation scenarios. We refined the draft survey elements from the focus group sessions and tested WTP elicitation formats. The survey materials for the focus groups included a script to be read by the person administering the survey, some visual materials, and survey questionnaires. The visual materials were used to highlight the set of historic temples at risk in the central region of Thailand, showing their present conditions, and illustrating the proposed management plan to restore these historic temples at risk. The survey materials were modified and finalized for the main survey.

The pre-tests took place from July to August 2004. The main survey was administered from January to February 2005 in 56 sampling points across the BMA. For the CV survey, we selected 800 households to interview. We were able to interview only 280 households for the group of people that would be asked to pay for the preservation of ten temples, and 240 households for the group of people that would be asked to pay for the preservation of two temples. Half of the respondents in each group were asked for a one-time surcharge on their income taxes and half, for a one-time donation to the trust fund. One hundred and twenty households out of 150 were personally interviewed in the CE exercise. Some households could not be interviewed because they were away on holiday or were in BMA only sometimes during the year. Other households refused to take part in the survey simply because they were busy at the time or the head of the household was not at home. This research design is summarized in Figure 1.

	CV	CE
Households that could not be located	237	8
Households that refused to answer	43	22
Households that participated	520	120

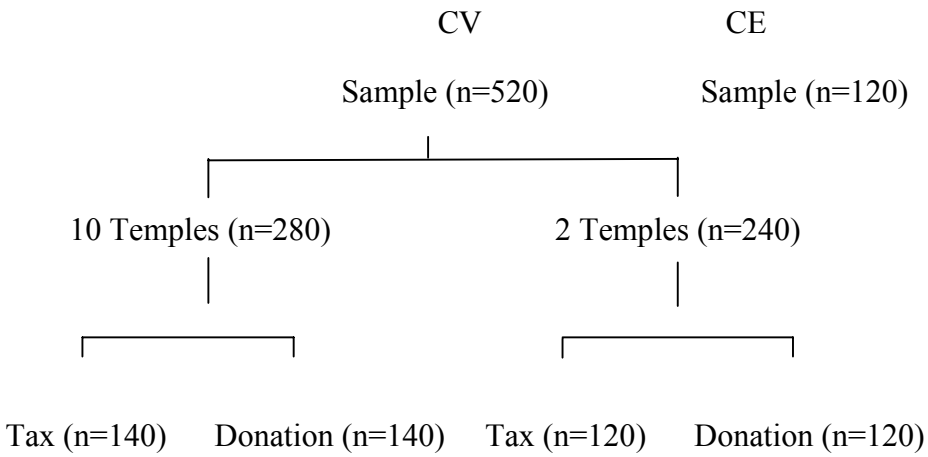

Figure 1. Research design

3.3 The Contingent Valuation Survey

It was decided to develop a hypothetical restoration program for the preservation of certain temples at a high level indefinitely. These values are represented in the study by estimated WTP for implementing the program. In welfare economic terms, these values represent equivalent variation (EV) measures of consumer surplus. For a particular respondent, this is defined as:

$$U^*(M,Q_0) = U^*(M\text{-}EV,Q_1) \qquad (1)$$

where U^* is a particular utility level for the respondent, M is his/her income, and the quality of the good will improve from quality level Q_0 to Q_1 if the preservation program is implemented.

The closed-ended elicitation format was used. Two payment vehicles including the amount of a one-time surcharge in income tax and a one-time voluntary contribution (donation) were used. To overcome the weakness of the voluntary contribution payment vehicle which is incentive incompatible, a matching grant was included in the hypothetical scenario. In addition, the questionnaire followed the approach of Cummings and Taylor (1999) to include an explicit discussion on the hypothetical bias problem ("the cheap talk" i.e., a technique to reduce bias in a CV) and used a secret

ballot to reduce enumerator bias. Each respondent received a card which specified a predetermined amount of WTP to which he/she might answer "yes" or "no". The card was then put into a sealed envelope to prevent the interviewer knowing the respondent's answer. The survey sample was split into four sub-samples, in order to test for the effects of different payment vehicles (tax versus donation), and scope effect (two temples versus ten temples). For example, respondents in the first sub-sample were asked the following question:

> "Suppose that we were to have a referendum that everyone would pay a one-time donation of **X** Baht to the trust fund. This fund would be managed in perpetuity to ensure the maintenance and upkeep of **two** historic temples at risk. In effect, this would be a bequest by the current generation to future generations. If more than half of the people vote 'YES', then the referendum is passed, and everyone pays a one-time donation of **X** Baht. A **NX** Baht contribution is matched by seed funds from UNESCO. The money is then mailed to the Thailand Cultural Heritage Conservation Committee. If more than half of the people vote 'NO', then no one pays **X** Baht next year and no money is sent to the Thailand Cultural Heritage Conservation Committee. If we were to take a secret vote, would you vote for this referendum?"

The questionnaire was also designed to identify zero bids. If the respondent answered "Yes" to the above questions, he would then be asked to state his maximum WTP. On the other hand, if the respondent answered "No" to the above questions, he would then be asked the following question: "Would you be willing to pay/contribute anything?" If his answer was still "No", then he would have a zero or negative WTP.

3.4 The Choice Experiment

The random utility model provides the theoretical framework for analyzing the data from the choice experiment exercise. The choice of an alternative represents a discrete choice from a set of alternatives. According to this framework, each alternative is represented with the indirect utility function that contains two parts: a deterministic element (V_i) and a stochastic element (ε_i) which represents unobservable influences on individual choice. The overall utility of alternative *i* is shown in equation (2).

$$U_i = V_i + \varepsilon_i \tag{2}$$

An individual will choose alternative *i* if $U_i > U_j$ for all $j \neq i$ (j is any other alternative). However, since the utilities include a stochastic component, one can only describe the probability of choosing alternative *i* as:

$$prob(i \ \ chosen) = prob(V_i + \varepsilon_i > V_j + \varepsilon_j; \forall j \in C) \tag{3}$$

where C is the set of all possible alternatives. All alternative j's are members of set C. In the choice experiment, V_i contains the attributes of the situation. McFadden (1974) showed that if the error terms in equation (3) are independently and identically distributed (IID) with a type I extreme value distribution (i.e., a Gumbel distribution), then the probability of choosing alternative *i* has the following closed-form representation:

$$prob(i) = \frac{e^{\lambda V_i}}{\sum_{j \in C} e^{\lambda V_j}} \quad (4)$$

This distribution is characterized by a scale parameter λ (which is inversely proportional to the variance of the error term) and a location parameter δ. In practice, the distribution chosen is the standard Gumbel distribution with λ=1 and δ=0 (Ben-Akiva and Lerman 1985).

McFadden's model is known as the conditional logit model. There are two problems with the conditional logit model: 1) the alternatives are independent and 2) there is a limitation in modeling variation in taste among respondents. The first problem arises from the IID assumption (constant variance), which results in the independence of irrelevant alternatives (IIA) property. This property states that the ratio of choice probabilities between two alternatives in a choice set is unaffected by changes in that choice set. If this assumption is violated, the conditional logit should not be used. One type of model that relaxes the homoskedasticity assumption of the conditional logit model is the nested logit model (McFadden 1978; Daganzo and Kusnic 1993). In this model, the alternatives are placed in subgroups and the variance is allowed to differ between the subgroups but is assumed to be the same within each group.

The second problem arises when there is taste variation among respondents due to observed and/or unobserved heterogeneity. Observed heterogeneity can be incorporated into the systematic part of the conditional logit model by allowing for interaction between individual characteristics and attributes of the alternatives or alternative specific constants. An estimated linear-in-parameters utility function for alternative *i* often takes the form:

$$V_i = \alpha_i + \sum_{j=1}^{n} \beta_j X_j + \sum_{k=1}^{m} \gamma_k \alpha_i Z_k \quad (5)$$

where

α_i is an alternative specific constant,
X_j is the ecosystem attributes associated with the alternative,
Z_k is a vector representing individual characteristics,
α_i, β_j and γ_k are parameters, and k
is any individual characteristic.

Individual characteristics can be included in the model by interacting them with the alternative specific constants (as shown in equation 5) and/or the attributes (not shown). All ecosystem attributes were entered into the model using effect codes (the utility of the status quo quality level is the negative sum of the utilities of the improvement quality levels). Welfare estimates were obtained in choice experiment studies using the following general formula described by Hanemann (1984):

$$CV = \frac{1}{\mu}[\ln \sum_{i \in C} e^{V_{i1}} - \ln \sum_{i \in C} e^{V_{i0}}] \quad (6)$$

where μ is the marginal utility of income, V_{i0} and V_{i1} represent the indirect observable utility before and after the change under consideration, and C is the choice set. When the choice set includes a single before and after policy option, equation (6) reduces to:

$$CV = \frac{1}{\mu}[\ln e^{V_{i1}} - \ln e^{V_{i0}} l] = \frac{1}{\mu}[V_{i1} - V_{i0}] \quad (7)$$

From equation (7), it is easily seen that for a linear utility function, the marginal rate of substitution between two attributes is simply the ratio of their coefficients (Hensher and Johnson 1981), and that the marginal willingness to pay (MWTP) for a change in attribute is given by equation (8).

$$MWTP_j = -\beta_j / \mu \quad (8)$$

where β_j is a parameter and

μ is the marginal utility of income.

The conditional logit model (with heterogeneity) was used in this study. The two problems mentioned were handled by having interaction terms between individual characteristics and attributes of the alternatives or alternative specific constants in the model.

The choice experiment was used in this study to value various preservation programs of historic temples in the central region of Thailand. Several variations of respondent choices allowed for an expression of preference between status quo (no government program implemented, but people continue to donate privately and temples have their own programs) and alternative conditions (with restoration programs that focus on specific kinds of temples). The questionnaire and the attributes used in the choice experiment were developed in cooperation with experts specializing in archaeology from the Department of Fine Arts of the Royal Thai Government. Respondents were presented with a status quo scenario versus a one-program alternative that focused on specific kinds of temples. In the introduction of the choice experiment, brief background information on the historic temples in Thailand was given. The respondents were then informed about the selected historic temples in the central region of Thailand (that were to be improved) and that their views were sought on the best possible restoration program for these temples. Then four attributes of the preservation program used in the choice experiment (Table 2) were explained. The amount of a one-time voluntary contribution was used as a WTP attribute.

Table 2. Attributes and attribute levels in the choice experiment survey

Attributes	**Level**
Number of temples to be protected	2, 10
Architectural significance	Low, High
Ages of temples (in years)	100, 400
Historical importance	Low, High
Amount of voluntary contribution (Baht)	0, 50, 100, 200, 500

The respondents were led through a pair-wise comparison between doing nothing and choosing a restoration program. Respondents were told that "We are going to run you through a set of different programs – the government wants to know which program you want". The choice sets were created using the Near-Optimal design suggested by Street and Burgess (2004). Using this procedure, we created eight alternatives using this design as shown in Table 3.

An example of a choice situation is shown in Table 4. In this study, respondents answered four choice sets. In each choice set, respondents were asked to choose between alternative A (no program) and alternative B (a specific program). Temple attributes were arranged into two hypothetical alternatives for respondents to elicit their preferred choice. (See Table 4.) This information together with their preferred choice indicates the trade off between temple attributes and the cost the respondent is willing to pay to preserve them. Socio-economic characteristics of the respondents were included in the estimation and entered in the estimating equation interactively.

Table 3. The near-optimal design

Number of Temples	Architectural Importance	Age of Temples (years)	Historical Importance	Price (Baht)
2	High	400	Low	50
10	Low	100	High	50
2	Low	100	Low	100
10	High	400	High	100
2	High	100	High	200
10	Low	400	Low	200
2	Low	400	High	500
10	High	100	Low	500

Table 4. Example of a choice situation

A	**B**
No government program is implemented but people continue to donate privately and temples have their own programs.	A restoration program to protect 10 temples, 400 years old, with high architectural significance and high historical importance.
Cost to you in a one-time donation: 0 Baht	Cost to you in a one-time donation: 100 Baht
I would choose → ☐ A	☐ B

To summarize the information in the data, effect codes were set up following Louviere (1988). For example, the effect codes used in the econometric analysis for the number of temples to be preserved correspond to SIZELO (2 temples) and SIZEHI (10 temples). SIZELO is the benchmark for comparison. The coefficient of SIZELO and SIZEHI provide the "marginal utility" of the number of temples to be preserved. The coefficient of SIZEHI multiplied by -1 provides the "marginal utility" of SIZELO. The effect codes for three other attributes (architectural, period, historical) were coded in the same way (see Table 5). (Note that LO codes are dropped from the equation when we estimate parameters econometrically.)

Table 5. Effect codes for preservation program attributes

Level	SIZEHI	ARCHHI	PERIODHI	HISTHI
High	1	1	1	1
Low	-1	-1	-1	-1

The conditional logit model was used to analyze the choice experiment data and the unknown parameters were estimated by maximizing the likelihood function. This information was then used to calculate the value of each temple attribute, which is essentially the marginal rate of substitution between temple attributes and money.

4.0 EMPIRICAL RESULTS

4.1 Empirical Results of the Contingent Valuation Survey

4.1.1 Public Perceptions of the Preservation of Historic Temples

The first part of the questionnaire was intended to probe the attitudes of respondents with regard to their personal views on preservation programs for historic temples in different regions of Thailand (Table 6). It was found that most respondents said that it was important to undertake restoration programs for historic temples in Thailand.

Table 6. Attitudes towards temple restoration in Thailand (in percentage)

Statement	0	1	2	3	4	5	9
1. Undertaking a restoration program for historic temples in the northern region of Thailand.	0.2	1.5	3.5	19.6	32.3	41.2	1.7
2. Undertaking a restoration program for historic temples in the central region of Thailand.	0	1.3	2.5	20.4	32.1	43.7	0
3. Undertaking a restoration program for historic temples in the north-eastern region of Thailand.	0.2	1.9	2.7	19.8	32.5	40.8	2.1
4. Undertaking a restoration program for historic temples in the southern region of Thailand.	1.3	3.7	4.2	21.5	29.8	37.3	2.2

Notes: 0 = Not at all important, 1 = Not important, 2 = Slightly important, 3 = Important, 4 = Very important, 5 = Extremely important, 9 = Don't know

Subsequently, a number of attitudinal statements sought to uncover respondents' underlying motives for supporting the preservation of historic temples in the central Thailand. A number of statements were read to the respondents, who were then asked to rate the relative importance of these statements (Table 7). The first of these questions asked individuals how important it was to have historic temples so that they and their family could visit them at the current time. This question was intended to reveal whether respondents had any direct use of these temples. Respondents overwhelmingly rated this statement as being very important, indicating that most Thai people want to visit these temples presumably for religious activities.

Another probing question on the importance of non-use values to respondents was in the form of a statement: "It is important to have these temples so that other people can visit them now". Agreement with this statement would suggest that a historic temple was recognized for its non-use values (option and existence/altruistic values). Over 90 percent of respondents agreed with this statement.

Bequest value is a type of option value which captures the belief that even if we do not use historic temples now, we have a duty to pass on these cultural assets to our children so that they can benefit from them. A very high percentage of respondents, 97 percent, agreed with this statement. Therefore, the respondents believe that historic temples are of value because of the benefits they can provide to future generations.

Statements 4 to 9 of the questionnaire (Appendix 1) sought to reveal whether respondents felt that historic temples had 'existence value' and therefore, that we (Thais) had a duty to protect them. A majority of respondents did agree that we do have such a moral duty. The responses given to the last six attitudinal questions appear to be consistent with one another.

Table 7. Attitudes towards the importance of historic temples in the central region of Thailand (in percentage)

Statement	0	1	2	3	4	5	9
1. It is important to have these temples so that I or my family can visit them now.	4.4	6.5	9.8	28.5	26.2	23.1	1.5
2. It is important to have these temples so that other people can visit them now.	0	0	1.2	15.0	36.0	46.8	1.0
3. It is important to have these temples so that future generations can visit them.	0.4	0	1.5	11.7	30.4	54.6	1.4
4. It is important to have these temples because they inspire pride in our heritage.	0.4	0.4	0.6	8.8	29.0	59.6	1.2
5. It is important to have these temples because they contribute to the aesthetic value of the central region of Thailand.	0	0.6	1.2	10.2	31.0	56.0	1.0
6. It is important to have these temples because they are part of Thai way of life.	0	0.4	1.7	17.5	33.5	45.6	1.3
7. It is important to have these temples because their names appear in Thai history.	1.7	2.3	8.7	22.7	33.7	27.9	3.0
8. It is important to have these temples for passing on Buddhism to future generations.	0	1.0	0.8	11.0	27.1	60.1	0
9. It is important to have these temples to remember events in history.	0.4	0.8	1.3	12.7	31.0	52.7	1.1

Notes: 0 = Not at all important, 1 = Not important, 2 = Slightly important, 3 = Important, 4 = Very important, 5 = Extremely important, 9 = Don't know

4.1.2 Profile of Respondents

Table 8 shows the socio-demographic characteristics of the respondents. Table 9 shows the distribution of responses on six selected attitudinal variables.

Table 8. Socio-demographic characteristics of respondents

Characteristics	Frequency	Percentage
Level of education		
Secondary school (6^{th} grade)	115	22.1
High school (12^{th} grade)	30	5.8
Technical diploma	68	13.1
Bachelor's degree	245	47.1
Master's degree	61	11.7
Doctorate	1	0.2
Gender		
Female	267	51.3
Male	253	48.7
Monthly income (Baht)		
0-2,500	23	4.4
2,501-5,000	79	15.2
5,001-7,500	82	15.8
7,501-10,000	68	13.1
10,001-15,000	103	20.0
15,001-20,000	71	13.7
20,001-25,000	41	7.9
25,001-50,000	49	9.4
Over 50,000	4	0.5
Occupation		
Civil servant	35	6.7
Owns business	32	6.2
Employee of private sector firm	300	57.7
Laborer	48	9.2
Student	11	2.1
Retiree	94	18.1

Table 9. Distribution of responses on selected attitudinal variables (in percentage)

Statement	Variable	1	2	3	4	5
1. Undertaking a restoration program for historic temples in the central region of Thailand.	ATTA32	1.3	2.5	20.4	32.1	43.7
2. It is important to have these temples for passing on Buddhism to future generations.	ATTA48	1.0	0.8	11.0	27.0	60.2
3. The decision about preserving the temples should be left to the experts.	ATTC13	19.4	43.7	14.8	18.6	3.5
4. The public should not have to pay for temple preservation programs.	ATTC14	14.2	46.7	21.0	16.6	1.5
5. Preserving historic temples was important to my vote.	ATTC17	1.3	3.3	17.3	60.2	17.9
6. We should pay as much as it takes to preserve historic temples.	ATTC18	2.1	9.6	23.5	51.3	13.5

Notes:
For statements 1-2: 1 = Not important, 2 = Slightly important, 3 = Important,
4 = Very important, 5 = Extremely important
For statements 3-6: 1 = Strongly disagree, 2 = Somewhat disagree, 3 = Neither agree nor disagree,
4 = Somewhat agree, 5 = Strongly agree

It is interesting to see to what extent different attitudes overlap at the level of individual respondents. Table 10 reports the correlation coefficients between each pair of six selected attitudinal variables and reveals a number of interesting points. The low correlations were probably due to the conversion of respondents' answers from an ordinal to a cardinal scale. There is a particularly weak correlation (0.031) between people's attitude towards the preservation of historic temples in the central region of Thailand and their attitude towards the decision to preserve historic temples. There is a very strong correlation (0.526) between people's attitude towards the decision to preserve historic temples and towards public responsibility for preservation programs. Indeed, people consistently either agreed or disagreed with either of these statements. Some other attitudinal variables showed negative correlations, such as attitudes towards preservation programs in the central region of Thailand and pubic responsibility for such preservation programs.

Table 10. Correlation between different attitudes towards historic temples preservation programs

	ATTA32	ATTA48	ATTC13	ATTC14	ATTC17	ATTC18
ATTA32	1					
ATTA48	0.365*	1				
ATTC13	0.031	-0.098*	1			
ATTC14	-0.111*	-0.120*	0.526*	1		
ATTC17	0.230*	0.158*	-0.126*	-0.158*	1	
ATTC18	.198*	0.206*	-0.130	-0.121*	0.407*	1

Note: * = Correlation is significant at 0.05 level

Table 11 gives the definition of each variable used in the contingent valuation model. Two selected attitudinal variables: ATTA32 and ATTC13 were included in the logit estimation. They were selected because of their low level of correlations. However, ATTA32 was not included in the regression because it was suspected that WTP and ATTA32 would be highly correlated and that ATTA32 would be endogenous i.e., determined by the model.

Table 11. Definition of variables used in the contingent valuation model

Variable	Definition
Bid	Bid amount
T2	T2=1 if the respondent is asked to pay for 2 temples, T2=0 if the respondent is asked to pay for 10 temples
TAX	TAX=1 if the payment vehicle is an income tax, TAX=0 if payment vehicle is a donation
Male	Male=1 if the respondent is male, Male=0 if the respondent is female
Age	The respondent's age
Education	The respondent's number of years at school
Income	The respondent's income
Owner	Owner=1 if the respondent owns a house, Owner=0 if the respondent rents a house
ATTC13	ATTC13=1 if the respondent agrees that the decision to preserve the temples should be left to the experts

4.1.3 Analysis of Respondents' Responses

The bid amounts and proportion of yes-answers are presented in Table 12. Table 13 documents the motives which lay behind respondents' decision to make positive WTP responses. The main reason for respondents not willing to pay anything was that they had no spare income (see Table 14).

Table 12. Distribution of responses by bid amount

Two temples	BID (Baht)	Will Not Pay	Will Pay	Total no. of respondents
	50	23 (38%)	37 (62%)	60
	100	32 (53%)	28 (47%)	60
	200	35 (58%)	25 (42%)	60
	500	51 (85%)	9 (15%)	60
Ten temples	**BID (Baht)**	**Will Not Pay**	**Will Pay**	**Total no. of respondents**
	50	22 (31%)	48 (69%)	70
	100	27 (39%)	43 (61%)	70
	200	29 (41%)	41 (59%)	70
	500	59 (84%)	11 (16%)	70

Table 13. Reasons for respondents' willingness to pay

Reasons	No. of respondents	Percentage of respondents
For my own benefit	33	9.16
For society as a whole	49	13.61
For future generations	51	14.16
For the pride of our nation	90	25.00
For passing on Buddhism to our children	80	22.23
For remembering historic events of our nation	30	8.34
Other reasons	27	7.50
Total	360	100.00

Table 14. Reasons for respondents' non-willingness to pay

Reasons	No. of respondents	Percentage of respondents
I have no spare income, otherwise I would pay.	41	25.63
I feel the restoration of historic temples is unimportant.	0	0.00
I do not believe paying will solve the problem.	19	11.87
I think it is the government's responsibility.	9	5.63
I do not like the payment method.	31	19.37
I prefer to make the payment directly to the temple(s).	24	15.00
I do not trust the administration committee	24	15.00
I fail to understand the question on willingness to pay. (Question 1 in Appendix B1).	7	4.37
Other reasons	5	3.13
Total	160	100.00

Table 15 presents the demographic characteristics or profiles of the respondents willing and unwilling to pay for the preservation of heritage temples in central Thailand. It became evident that the latter were respondents with a lower education and income. It was interesting to find that female respondents tended to support the preservation program of historic temples more than males. To verify these conclusions, a multivariate analysis of the determinants of "who is in the market" (people who are willing to pay for preservation programs) was done. Table 16 shows the result of the logit model analysis. The dependent variable was defined as "1" if a respondent's WTP was greater than zero, and defined as "0" if a respondent's WTP was equal to zero. It was found that gender, age, education, and owning a house were the determinants of respondents' WTP. People who were "in the market" tended to be female and house owners. Also, age and high education levels were positively related to willingness to pay for the preservation program.

Table 15. Profile of the respondents willing and unwilling to pay for temple preservation in central Thailand

Profile	Respondents willing to pay (%) (n=360)	Respondents unwilling to pay (%) (n=160)
Gender		
Female	55	43.12
Male	45	56.88
Age (years)	34.35	33.43
Education level (years of schooling)	14	12.52
Occupation		
Civil servant	7.20	5.60
Owns business	5.60	7.50
Employee of a private sector firm	58.30	56.30
Laborer	9.20	9.40
Student	2.50	1.30
Retiree	17.20	19.9
Monthly income(Baht)	14,093	11,796
Monthly utility (Baht)	2,066	1,830
Weekly expenditure (Baht)	1,280	1,358
Kind of house		
1-bedroom	24.40	48.80
2-bedroom	28.30	16.30
3-bedroom	26.90	18.80
4-bedroom	20.40	16.10
Tenancy status		
Owner	65.80	81.90
Tenant	34.20	18.10

Table 16. A multivariate analysis of the determinants of "who is in the market"

Variable	Coefficient	Standard Error	t-ratio	P-value
Constant	-1.3223	0.65151	-2.0295	0.04240
Male	-0.4644**	0.19926	-2.3308	0.01976
Age	0.02364**	0.01068	2.21288	0.02690
Education	0.10731**	0.03109	3.45079	0.00055
Income	-0.0000015	0.000011	-0.1415	0.88747
Owner	0.62141**	0.255638	2.43082	0.01506

Notes: ** = significant at 5%. Variables which are significant are in bold.

An analysis of debriefing statements on the WTP questions (Table 17) was done to discover the respondents' opinions about the survey. Overall, most respondents felt that the questions in the survey were quite realistic and not difficult. Responses seemed to be logical and consistent with the responses on the attitudinal questions mentioned earlier.

Table 17. Responses to debriefing statements

Statement	Respondents Not Willing to Pay(%)	Respondents Willing to Pay (%)
1) I find the questions in the survey difficult to understand.		
Disagree	53.70	71.10
Agree	46.30	28.90
2) I find the questions in the survey unrealistic.		
Disagree	73.80	79.40
Agree	26.20	20.60
3) The decision about preserving the temples should be left to the experts.		
Disagree	76.90	77.80
Agree	23.10	22.20
4) The public should not have to pay for temple preservation programs.		
Disagree	72.50	86.10
Agree	27.50	13.90
5) The current external state of the temples is better than presented here.		
Disagree	70.00	56.10
Agree	30.00	43.90
6) The current external state of the temples is worse than presented here.		
Disagree	67.50	55.60
Agree	32.50	44.40
7) Preserving historic temples was important to my vote.		
Disagree	33.10	16.90
Agree	66.90	83.10
8) We should pay as much as it takes to preserve historic temples.		
Disagree	51.30	28.10
Agree	48.70	71.90

4.1.4 Estimation of WTP and Analysis of Factors Influencing WTP Values

The level of WTP bids was investigated using logistic regression to model the respondents' responses against one attitudinal variable and five socio-economic variables. This is a common approach in contingent valuation studies to test the validity of WTP results by examining how well the model corresponds to the economic theory where individuals with higher incomes are expected to have a higher than average WTP. Similarly, individuals with low incomes would be expected to have a lower than average WTP. Table 18 reports the logit model of WTP bids.

The relationships between WTP responses and characteristics of respondents shown by the model were logical and in line with the economic theory. Income was an important explanatory factor; a high-income respondent had a higher WTP than a low-income respondent. A respondent with a higher education had a higher WTP than one with lower education. The attitude towards the decision to preserve the temples (ATTC13) was not found statistically significant. It was also found that male respondents had a lower WTP than female respondents and older respondents had a lower WTP than younger ones.

Table 18. Parameter estimates of the logit model

Variable	**Coefficient**	**Standard Error**	**t-ratio**	P-value
Constant	0.96	0.71	1.35	0.17
Bid	-0.005**	0.0006	-8.29	0.00
T2	-0.79**	0.21	-3.66	0.0002
TAX	-0.16	0.20	-0.80	0.42
Male	-0.39**	0.20	-1.95	0.05
Age	-0.02*	0.01	-1.80	0.07
Education	0.05*	0.03	1.67	0.09
Income	0.00004**	0.000012	3.31	0.0009
Owner	0.14	0.24	0.57	0.57
ATTC13	-0.03	0.25	-0.11	0.91

Notes:
* = significant at 10%
** = significant at 5%
Variables in bold are statistically significant.

Table 19 shows the estimates of WTP for the restoration program of historic temples. The average WTP values were computed using the sample means (Table 20) of all variables in the logit model. Sub-samples 1 and 2 differed in terms of the payment vehicle, and comparing them provided information on the effect of the payment vehicle on WTP. As shown in Table 19, the two WTP values (70 Baht per person versus 99 Baht per person) are slightly different. A variable for TAX (=1 if income tax, =0 if donation) was included in the logit model to test for different payment vehicles that is, income tax and donation. A test on statistical significance showed no difference between the two, indicating that it does not matter if the payment vehicle is in the form of income tax or a donation.

Table 19. Average WTP to preserve historic temples

Sub-sample	**Number of temples**	**Payment vehicle**	**Parametric WTP (Baht/person)**	**Non-parametric WTP (Baht/person)**
1	Two temples	Income Tax	70	278
2	Two temples	Donation	99	206
3	Ten temples	Income Tax	214	362
4	Ten temples	Donation	243	290

Table 20. Descriptive statistics of variables in the WTP estimation

Variable	Mean	Standard Deviation	Minimum	Maximum
Male	0.48	0.50	0	1
Age	34.06	12.32	20	78
Education	13.54	4.25	6	22
Income	13,386.53	10,835.05	1,250	75,000
Owner	0.29	0.45	0	1
ATTC13	0.22	0.41	0	1

Note: Total respondents = 520

A comparison of sub-samples 1 and 3 showed a huge difference in WTP between two temples and ten temples. A variable, T2 (=1 if it is asked to pay for two temples, =0 if it is asked to pay for ten temples), was included in the logit model to test for the scope effect. A test on statistical significance confirmed a highly significant difference, indicating that individuals tended to pay more for a larger number of temples. The non-parametric estimates of WTP (using the MSCORE procedure in LIMDEP – see Table 21 below) were higher than the parametric WTP estimates.

Table 21. Non-parametric estimates of the logit model

Variable	Coefficient	t-ratio	P-value
Constant	0.9344	1.960	0.049
BID	-0.0032	-2.030	0.042
T2	-0.2690	-0.408	0.682
TAX	0.2332	0.3503	0.726

4.1.5 Analysis of the Impact of the Covariates on WTP

Table 22 shows the magnitude of the impact of the covariates on WTP estimates in four different cases. A comparison of Case 1 (a respondent with primary school education, 30 years old, and a monthly income of 50,000 Baht) and Case 2 (a respondent with primary school education, 30 years of age, and a monthly income of 10,000 Baht) provides information on the impact of the income variable on WTP for the restoration of two temples through an income tax payment. As a respondent's income increases from 10,000 Baht to 50,000 Baht, holding other variables constant, the respondent's WTP value will increase from 46 Baht to 337 Baht. A comparison of Case 2 and Case 3 provides information on the impact of the education variable on WTP value. As a respondent's duration of education increases from 12 years to 16 years, holding other variables constant, the respondent's WTP value will increase from 46 Baht to 83 Baht. A comparison of Case 3 and Case 4 provides information on the impact of the age variable on WTP value. As a respondent's age increases from 30 years to 50 years, holding other variables constant, the respondent's WTP value will decrease from 83 Baht to 10 Baht.

Table 22. Magnitude of the impact of the covariates on WTP

Covariate	**Case 1**	**Case 2**	**Case 3**	**Case 4**
Age (in years)	30	30	30	50
Education (in years of schooling)	12	12	16	16
Monthly Income (in Baht)	50,000	10,000	10,000	10,000
WTP (Income tax) (in Baht)				
2 temples	337	46	83	10

Table 23 shows the covariate elasticity of WTP values. (There are three elasticities of WTP values: age elasticity, education elasticity, and income elasticity. The magnitude of the impact of age was found to be the highest; a one percent increase in age will decrease the amount of WTP by 18.25 percent. The magnitude of the impact of education level was found to be the second highest; a one percent increase in years of education will also increase the amount of WTP but by only 2.41 percent. The impact of income was found to be the smallest; a one percent increase in income will increase the amount of WTP by a mere 1.58 percent.

Table 23. Covariate elasticity of WTP values

Covariates	**Elasticity of WTP Values**
Age	-18.25
Education	2.41
Income	1.58

The elasticities in the table above were calculated as follows:

1) Age elasticity of WTP $= \dfrac{\%\Delta WTP}{\%\Delta Age}$

$$= \frac{(83-10)}{(30-50)} \times \frac{50}{10} = -18.25$$

2) Education elasticity of WTP $= \dfrac{\%\Delta WTP}{\%\Delta Education}$

$$= \frac{(83-46)}{(16-12)} \times \frac{12}{46} = 2.41$$

3) Income elasticity of WTP = $\dfrac{\%\Delta WTP}{\%\Delta Income}$

$$= \frac{(337-46)}{(50{,}000-10{,}000)} \times \frac{10{,}000}{46} = 1.58$$

4.2 Empirical Results of the Choice Experiment

The descriptive statistics of the sample used in the choice experiment estimations are presented in Table 24. Using Limdep 8, we estimated the parameters using the conditional logit model. The results for two different models, 'no interaction' (Model 1) and 'with interaction' (Model 2) (interaction between alternative specific constants and socio-economic variables), are presented in Table 25. Both models included one common alternative specific constant. An increase in the log-likelihood function indicates the advantage of applying Model 2. The results in Table 25 provide relevant input for a policy-maker in designing a restoration program for historic temples. People tend to be willing to pay for temples of architectural and historical importance. Among the socio-economic characteristics, both "Age" and "Income" were found to be statistically significant. The positive sign for "Age" indicates that older respondents are more likely to vote for temple preservation. The positive sign for "Income" indicates that higher-income respondents are more likely to do so than lower-income ones.

Table 24. Descriptive statistics of the sample used in the choice experiment estimations

Profile	Mean
Gender	
Female	56 %
Male	44 %
Education (in years of schooling)	15.60
Age (in years)	35.45
Monthly Income (in Baht)	26,072.00
Weekly Expenditure (in Baht)	2,123.01
Tenancy Status	
Owner	87.5 %
Tenant	12.5 %

Table 25. Econometric results of choice experiment – effect coding

	Model 1 (No interaction)			Model 2 (With interaction)		
Variable	**Coefficient**	**t-ratio**	**P-value**	**Coefficient**	**t- ratio**	**P-value**
Constant	-1.1865	-4.455	0.000	-2.976	-3.448	0.0005
Cost	-0.0032**	-5.649	0.000	-0.0033**	-5.706	0.000
Size	-0.0374	-0.351	0.724	-0.094	-0.858	0.390
Architectural	0.2787*	2.582	0.009	0.2873*	2.626	0.008
Period	0.0283	0.265	0.790	0.0274	0.254	0.799
Historical	0.1796*	1.679	0.093	0.1817*	1.678	0.093
Male				-0.109	-0.506	0.612
Age				0.0361**	3.252	0.001
Income				0.0000013*	-1.694	0.090
Education				0.0526	1.279	0.200
Log-likelihood	-270.94			-264.94		
No. of respondents	120			120		
No. of observations	480			480		

Notes:
* = Significant at 10%
** = Significant at 5%
Variables in bold are statistically significant.

Table 26 presents the marginal rates of substitution between the attributes using the coefficient for cost as numeraire. By using equation (7) we can produce mean welfare estimates (compensating variation-CV) as shown in Table 26. The numbers are computed as follows.

Mean WTP = -28-28 = -56 (Not significant)

Mean WTP = 87-(-87) = 174 (Significant)

Mean WTP = 8-(-8) = 16 (Not significant)

Mean WTP = 55-(-55) = 110 (Significant)

Table 26. Marginal WTP and mean WTP for attributes

Attribute	**Marginal WTP (Baht/person)**	**Mean WTP (Baht/person)**
Number of temples	-28 (Not significant)	-56 (Not significant)
Architectural importance	87 (Significant)	174 (Significant)
Age of temple	8 (Not significant)	16 (Not significant)
Historical importance	55 (Significant)	110 (Significant)

The welfare estimates indicate that an individual is willing to pay 174 Baht for a preservation program for temples of architectural importance and 110 Baht for a preservation program for temples of historical importance.

5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion of the Results of the Experimental Design

This study focused on two experimental design questions of interest to contingent valuation (CV) researchers in Southeast Asia. First, what is the most appropriate payment vehicle for use by researchers attempting to value public goods? The conventional thinking among researchers in Southeast Asia is that it is impossible to use mandatory income tax payment vehicles, and that voluntary donation mechanisms are the only feasible payment vehicle even though they are not incentive-compatible. In this study, two payment vehicles were tested: a one-time income tax surcharge and a one-time voluntary donation. In theory, there is a problem of incentive-incompatibility associated with the use of voluntary donation mechanisms. To overcome this problem, this study incorporated a matching grant from UNESCO in a hypothetical scenario.

Second, many people speculate that the valuation of cultural heritage and similar public goods in Southeast Asia is heavily influenced by "warm glow effects", and that CV exercises to value such goods would fail rigorous scope tests of the type recommended by the National Oceanic and Atmospheric Administration (NOAA) panel. "Warm glow effects" occur when respondents do not express their valuation, but instead express broad moral attitudes to environmental issues. To reduce these effects, this study asked respondents to state their valuations in a secret vote. Each respondent put his/her answer in an envelope provided.

The econometric results from this study showed no significant difference in WTP values between the two payment vehicles. For example, the average willingness to pay a one-time income tax surcharge to implement a preservation program for ten historic temples was estimated at 214 Baht per person while the average willingness to make a one-time voluntary donation to implement a preservation program that protects ten historic temples was estimated at 243 Baht per person. With some modification of the hypothetical scenario (i.e., a matching grant and a secret vote) the two payment vehicles were almost equally effective in valuing the cultural heritage in Thailand.

This study also extended the analysis to investigate changes in the non-market values of historic temples to changes in price and preservation program by using a choice experiment (CE) method. A choice experiment (CE) was used in this study to value various preservation programs of historic temples in the central region of Thailand. A CE exercise allows several preservation programs with varying attributes to be valued simultaneously. The findings in this study show that Thai people prefer a preservation program for temples with architectural and historical importance. The welfare estimates indicate that an individual is willing to pay 174 Baht for a preservation program of temples with architectural importance and is willing to pay 110 Baht for a preservation program of temples with historical importance.

The research findings suggest a number of relevant guidelines for practitioners and policy-makers such as whether or not government should give grants for the restoration of historic temples. In this case, the CV method is the most appropriate to get an estimate of the total value of a cultural good. When the question of interest involves estimating values of different attributes of a restoration program, the CE

approach should be used. CE has the advantage of being able to produce values of attributes simultaneously.

5.2 Aggregation of WTP Values

The choice of an appropriate method of aggregation is important if the resulting estimates are to be useful for decision-making. Using conservative estimates of aggregate WTP is often recommended as being the best approach to avoid inaccurate decisions in a cost-benefit analysis of a development project. If the lower bound estimates exceed costs, then it provides good evidence to support the project; if, however, they are less than costs then there is still room for argument about the level of any benefits not captured by the WTP study. In this study, a conservative approach to valuation was used and the choice of the aggregation method was determined by the income tax payment. Results from the CV study allowed us to compare two systems of regulating the provision of a cultural good: state and non-governmental non-profit organizations. Under the first system, the good is provided by public institutions. Nobody is excluded from the consumption of the cultural public good and the total cost of the restoration program is covered by taxation. This study was designed to illustrate to the government that people were in fact willing to pay for temple restoration and such a program could be cost effective.

To illustrate the amount of revenues that could be obtained by the government for a preservation program of historic temples, this study created a case of a government program to restore ten specific historic temples in Samut Songkram Province, central Thailand. Figure 2 shows two of such temples (Indraram Temple and Bangkaeyai Temple).

Indraram Temple Bangkaeyai Temple

Figure 2. Examples of two historic temples to be preserved by a government program

In 2004, there were 6,652,069 adults in Thailand registered as income-earners. They are divided into six classes reflecting their net annual income (Table 27). Of these, 1,208,058 were exempted from paying income tax as their net income was less than 80,000 Baht per annum, leaving the remaining 5,444,011 liable to pay income tax. The income tax surcharge that the majority of people said they would support to preserve ten temples was estimated at 214 Baht per person. Thus, the government could collect the amount of 1,165 million Baht in total revenue. This aggregate benefit is much higher than the cost of the restoration of ten temples (about 2.5 million Baht).

Table 27. Number of income tax payers by net income class (Thailand, 2004)

Net annual income (Baht)	Number of persons
1-80,000	1,208,058*
80,001-100,000	714,787
100,001-500,000	4,116,574
500,001-1,000,000	412,051
1,000,001-4,000,000	177,083
Over 4,000,000	23,516
Total	6,652,069

Source: Department of Internal Revenue, 2002
Note: * = Exempted from paying income tax

5.3 Conclusions and Lessons Learned

Five lessons can be learned from this study:

1) Very few economic valuation studies have been conducted in the area of cultural heritage in Thailand. This study showed that the CVM can be used to estimate the non-market values of historic temples in the central region of Thailand.

2) Generally, this study found that Thai people have a positive attitude towards the restoration of historic temples. This implies that the deterioration and damage of historic temples are undesirable and that the public is willing to pay to preserve these temples.

3) This study showed there is a proportion of respondents (30%) who are not willing to pay anything to preserve historic temples. Some of these responses may be protests against some aspect of the survey instrument such as rejecting the contingent scenario, and hence are not a reflection of the individuals' true preferences. Others, however, are "true" zero values arising from budget constraints and/or lack of interest in cultural issues. Since a large proportion of the respondents are willing to pay for the restoration of historic temples, the welfare of a significant proportion of the Thai population would, therefore, be increased by restoring these temples.

4) There are clear potential policy uses of the value estimates generated by this study. Firstly, valuation estimates are useful in evaluating whether to undertake restoration programs to preserve historic temples. Secondly, valuation estimates are also useful in determining the level of effort and resources that should be devoted to restoring historic temples. The result of the aggregate WTP values can be used to justify current expenditure on the preservation of historic temples or to warrant a larger amount of the resources currently available. Finally, valuation results can aid decision-making when funding choices have to be made among competing programs under the cultural heritage preservation umbrella such as performing arts and heritage temples.

5) Stated preference approaches such as the choice experiment method can be used to value several restoration programs with varying attributes simultaneously, explicitly accounting for trade-off between programs.

5.4 A Proposed Management Scheme for the Preservation of Historic Temples

In Thailand, two major government agencies and one non-governmental organization are responsible for preserving historic temples under their own mandates. The Fine Arts Department (with the annual budget from the central government) is mandated to preserve, conserve, revive, promote, create and disseminate the knowledge, wisdom and culture of the nation. On the other hand, the Natural and Cultural Environmental Conservation Division (under the Office of Natural Resource and Environmental Policy and Planning) generally coordinates integration between the central and local government agencies concerning the preservation of historic temples. Coordination takes place through appropriate committees of which concerned agencies are members. The Foundation for the Conservation of the Natural and Cultural Environment is a non-governmental organization set up by interest groups in order to promote efforts to preserve local cultural identities. The main source of financial support to run various activities is from public donations.

Currently, there is no national program to preserve historic temples in Thailand. Each individual temple has its own restoration program financed by public donations. The Fine Arts Department does not give financial support but provides technical assistance on restoration works. The Natural and Cultural Environmental Conservation Division has since its establishment in 1992 altered, improved and expanded its structure to support systematic and practical studies on cultural heritage preservation. Recently, it created Local Units for the Conservation of the Natural and Cultural Environment in 75 provinces around the country. These units have their own administrative bodies. Each unit is chaired by the governor of the respective provinces.

To achieve the goal of preserving historic temples in Thailand, an appropriate management scheme (illustrated in Figure 3) is proposed along the following lines.

1) The proposed management scheme can be built on the existing social infrastructure. The Foundation for the Conservation of the Natural and Local Cultural Environment, which was established in 1993, can work with the Local Units for the Conservation of Natural and Cultural Environment (LUCNCE) to establish a trust fund to be financed mainly by voluntary donations from the public. The public could send their donations to LUCNCE which are located in 75 provinces around the country. The Fund could be administered by a steering committee composed of representatives from the Foundation, LUCNCE, and the Fine Arts Department. The interest earned should be returned to the Fund to be used to finance restoration works on temples. Thus, a revolving fund has to be created. It is anticipated that the Fund will be able to finance all activities without budgetary support from the central government within a reasonable period of time.

2) To stimulate voluntary contributions from the public, donors should be informed that the UNESCO will provide a matching contribution.

3) Additional funds can come from fund-raising activities organized by the Foundation. For instance, the Foundation could sell postcards, T-shirts, and other souvenirs and organize shows in performing arts (such as classical dance) at heritage parks. Cultural festivities could be held all year round to create cultural awareness and appreciation of the Thai culture in the young generation. It is hoped that when

these youngsters grow up, they will donate money to help support the preservation of historic temples.

4) Municipalities can play important roles in preserving historic temples under their jurisdiction. The LUCNCE and the Fine Arts Department should plan for preservation carefully. For instance, they should make a complete inventory of the restoration needs of listed temples every five years. The Foundation could then allocate budgets to the municipalities based on this inventory.

5) It is essential for local communities (where historic temples are located) to participate in preservation programs. For example, they could get involved in the designation and registration of the temples. Categorization by historical and architectural importance could be used to classify valuable temples. Monetary incentives may be given to those communities who preserve their historic temples well.

6) Another main player in the field of preservation is the private sector. The Foundation and local private firms should partner together to establish limited companies which are exempted from paying taxes. The main objective of such corporate entities would be to safeguard and upkeep historic temples. Profits from fund-raising activities for these temples will be used to realize this main objective. This public-private partnership could also be a catalyst in the exchange of knowledge and information among the various government agencies concerned.

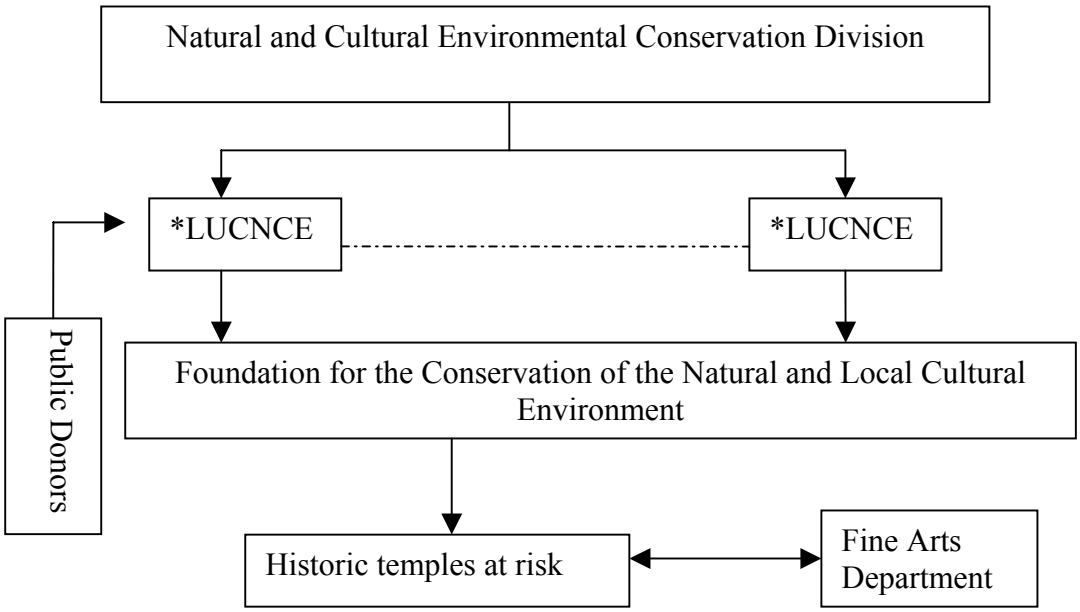

Figure 3. A proposed management scheme for the preservation of historic temples in Thailand
Note: * LUCNCE = Local Units for the Conservation of the Natural and Cultural Environment

REFERENCES

Ben-Akiva, M. and S.R. Lerman. 1985. Discrete Choice Analysis: Theory and Application to Travel Demand. MIT Press. Cambridge. The United States of America.

Carson, R.; R. Mitchell; M. Conway; and S. Navrud. 1997. Non-Moroccan Values for Rehabilitating the Fes Medina. World Bank. World Bank Report. Washington DC. 238 p.

Cummings R.G. and L.O. Taylor. 1999. Unbiased Value Estimates for Environmental Goods: A Cheap Talk Design for the Contingent Valuation Method. The American Economic Review. Vol. 89. No.3 (June). 649-665.

Daganzo, C.F. and M. Kusnic 1993. Two properties of the nested logit model. Transportation Science. Vol. 27. 395-400.

Garrod, G.D.; K.G. Willis; H. Bjarnadottir; and P. Cockbain. 1996. The non-priced benefits of renovating historic buildings. Cities. Vol. 13. No. 6. 423-430.

Hanemann, W.M. 1984. Welfare evaluations in contingent valuation experiments with discrete responses. American Journal of Agricultural Economics. Vol. 66. 332-341.

Hensher, D.A. and L.W. Johnson. 1981. Applied Discrete Choice Modeling. John Wiley. New York. 468.

Louviere, J., 1988. Analyzing Individual Decision Making: Metric Conjoint Analysis. Sage University Series on Quantitative Applications in the Social Sciences, Series No. 67. Sage Publications Inc. Newbury Park, CA.

McFadden, D. 1974. Conditional Logit Analysis of Qualitative Choice Behavior. P. Zarembka ed, *In* Frontiers in Econometrics. Academic Press: New York, United States of America. 105-142.

McFadden, D. 1978. Modeling the choice of residential location. A. Karlquist, L. Lundquist, F. Snickers, and J.W. Weibull ed, *In* Spatial Interaction Theory and Planning Models. North-Holland. Amsterdam. pp. 75-96.

Morey, E.; K. Rossmann; L. Chesnut; and S. Ragland. 1997. Valuing Acid Deposition Injuries to Cultural Resources. National Oceanic and Atmospheric Administration, National Acid Precipitation Assessment Program, Washington, D.C. Grant # NA56RC0264. 84 p.

Navrud, S. and J. Strand 2002. Social costs and benefits of preserving and restoring the Nidaros Cathedral. S. Navrud and R.C. Ready ed, *In* Valuing Cultural Heritage: Applying Environmental Valuation Techniques to Historic Buildings, Monuments and Artifacts. Edward Elgar. Cheltenham, UK. 31-39.

Street, D.J. and L. Burgess 2004. Optimal and near-optimal pairs for the estimation of effects in 2-level choice experiments. Journal of Statistical Planning and Inference. Vol 118. Issue 1-2. 185-199.

Willis, K.G. 1994. Paying for heritage: What price for Durham Cathedral? Journal of Environmental Planning and Management. Vol.37. Issue 3. 267-78.

APPENDIX 1

Contingent Valuation Survey

- INSTRUCTIONS TO INTERVIEWERS ARE IN CAPITALS.
- IN THE CASE OF A REFUSAL TO RESPOND, NOTE THIS WITH A CAPITAL 'R'. DO NOT MERELY LEAVE A BLANK.
- RESPONDENTS MUST BE PAYING INCOME TAX.
- INTRODUCE YOURSELF AS FOLLOWS:

Good morning/afternoon, Sir/Madam. My name is _____. I am involved in a study being conducted by the National Institute of Development Administration on the value of cultural heritage. We are carrying out a survey to find out how much people value historic temples in the central region of Thailand, and would like to ask you a series of questions. All answers are confidential and there are no right or wrong answers. Your opinion and the information provided will be used to improve the quality of historic temples in the central region of Thailand. Therefore, your honest response is essential for the success of this research project and for the future of these historic temples.

Name of Interviewer: _____ Date: ____/____/2004 Serial No. _____

Time interview starts: _____ Time interview ends: _____

Sampling Point:

□ 1. North Bangkok □ 2. Central Bangkok

□ 3. South Bangkok □ 4. West Bangkok

A. ATTITUDE TOWARDS CULTURAL HERITAGE

A1. Have you visited any of the historic temples in the central region of Thailand?

Temple	Province	Yes	No
Arunratchawararam	Bangkok		
Prakaew	Bangkok		
Yaitakkinaram	Nakornnayok		
Prapathomchedi	Nakornpathom		
Mahathat	Ratchaburi		
Amphawan	Samutsongkram		
Chulamani	Samutsongkram		
Phetsamutworavihan	Samutsakorn		

A2. Whether or not you have visited or plan to visit any of these temples, do you feel that it is important that these temples exist?

	Not at all Important				Very Important		Don't Know
Circle one number	0	1	2	3	4	5	9

A3. How important is it to you and your household that a restoration program to maintain the appearance of temples in Thailand is undertaken? Please rate the importance of this issue – in the central and other regions of Thailand listed below – to you and your household.

Circle one number for each region.	Not at all Important				Very Important		Don't Know
1. Undertaking a restoration program for historic temples in the northern region of Thailand.	0	1	2	3	4	5	9
2. Undertaking a restoration program for historic temples in the central region of Thailand.	0	1	2	3	4	5	9
3. Undertaking a restoration program for historic temples in the north-eastern region of Thailand.	0	1	2	3	4	5	9
4. Undertaking a restoration program for historic temples in the southern region of Thailand.	0	1	2	3	4	5	9

A4. Listed below are reasons why some people think historic temples in the central region of Thailand are important to preserve. How important to you are each of the following reasons for preserving these temples? Read the entire list before answering.

Circle one number for each reason.	Not at all Important					Very Important	Don't Know
1. It is important to have these temples so that I or my family can visit them now.	0	1	2	3	4	5	9
2. It is important to have these temples so that other people can visit them now.	0	1	2	3	4	5	9
3. It is important to have these temples so that future generations can visit them.	0	1	2	3	4	5	9
4. It is important to have these temples because they inspire pride in our heritage.	0	1	2	3	4	5	9
5. It is important to have these temples because they contribute to the aesthetic value of the central region of Thailand.	0	1	2	3	4	5	9
6. It is important to have these temples because they are part of Thai way of life.	0	1	2	3	4	5	9
7. It is important to have these temples because their names appear in Thai history.	0	1	2	3	4	5	9
8. It is important to have these temples for passing on Buddhism to future generations.	0	1	2	3	4	5	9
9. It is important to have these temples to remember events in history.	0	1	2	3	4	5	9

B. VALUATION QUESTIONS

SHOW FIGURE 1: This map shows important historic temples in the central region of Thailand. You can see that temples at risk are marked with red dots.

PRESENT CARD A: READ BACKGROUND INFORMATION ON SOME SELECTED TEMPLES AT RISK

PRESENT CARD B: READ SCENARIO 'A' – PRESENT STATE OF AFFAIRS

SHOW FIGURE 2: Photographs show the present conditions of the two temples at risk.

PRESENT CARD B: READ SCENARIO 'B'– PROPOSED MANAGEMENT PLAN

SHOW FIGURE 3: Photographs of two temples in Amphawa to illustrate how high quality restoration work looks like.

PRESENT CARD C: READ THE CHEAP TALK SCRIPT

PRESENT

- CARD D1 to respondents in sub-sample 1
- CARD D2 to respondents in sub-sample 2
- CARD D3 to respondents in sub-sample 3
- CARD D4 to respondents in sub-sample 4

B1. I want you to suppose that we are taking a secret vote. Do you vote for this referendum?

□ Yes → **GOTO B2**

□ No → Would you pay anything?

□ Yes → **GOTO B2**

□ **No**

IF NO PAYMENT: **What is your reason for not wanting to pay anything?**

□ 1. I have no spare income, otherwise I would pay.

□ 2. I feel the restoration of historic temples is unimportant.

□ 3. I do not believe paying will solve the problem.

□ 4. I think it is the government's responsibility.

□ 5. I do not like the payment method.

□ 6. I prefer to make the payment directly to the temple(s).

□ 7. I do not trust the administration committee.

□ 8. I fail to understand the question on willingness to pay.

□ 9. Other reasons: (specify) _____

SKIP TO PART C

B2. What is the most you are willing to pay? _____ Baht.

B3. What is the reason for your wanting to pay to restore these historic temples?

□ 1. For my own benefit.

□ 2. For society as a whole.

□ 3. For future generations.

□ 4. For the pride of our nation.

□ 5. For passing on Buddhism to our children.

□ 6. For remembering historic events of our nation.

□ 7. Other reasons: (specify) _____

B4. How certain are you that you would vote for this proposition in a real referendum?

	Not at all Certain				Very Certain
Circle one number	1	2	3	4	5

C. QUESTIONS ABOUT THE SURVEY

INSTRUCTIONS: Please rate how strongly you agree or disagree with each of the following statements by circling the appropriate number.

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
C1. I find the questions in the survey difficult to understand.	1	2	3	4	5
C2. I find the questions in the survey unrealistic.	1	2	3	4	5
C3. The decision about preserving the temples should be left to the experts.	1	2	3	4	5
C4. The public should not have to pay for temple preservation programs.	1	2	3	4	5
C5. The current external state of the temples is better than presented here.	1	2	3	4	5
C6. The current external state of the temples is worse than presented here.	1	2	3	4	5
C7. Preserving historic temples was important to my vote.	1	2	3	4	5
C8. We should pay as much as it takes to preserve historic temples.	1	2	3	4	5

C9. When you were voting on the issue of preservation programs, how important was each of the factors below to your decision? Please circle the appropriate number, where 1 = not important at all to your decision and 5 = extremely important to your decision.

Factors	Not Important at All	Not Important	Somewhat Important	Very Important	Extremely Important
1) Historical importance of temples	1	2	3	4	5
2) Age of temples	1	2	3	4	5
3) Current external appearance of temples	1	2	3	4	5
4) Cost of preservation of temples to my household	1	2	3	4	5
5) Great reputation and recognition of temples	1	2	3	4	5
6) Geographical importance (location) of the temples	1	2	3	4	5

C10. In a recent study, one result shows there are much lower WTP values for a tax payment plan than for a contribution payment plan. We are trying to understand why there is this difference. We came up with two possible explanations. Which of these explanations do you find most likely to be the cause of any differences between the WTP of the two payment vehicles?

□ 1. People do not like the tax payment vehicle because they do not trust the government, and feel that the tax revenues will not actually be used effectively on historic preservation as promised.

□ 2. People like the donation payment vehicle because they perceive it to be voluntary, and they will not, in fact, be obliged to actually pay.

Why do you feel this way?

_____

D. SOCIO-ECONOMIC BACKGROUND

D1. Religion: □ 1. Buddhist □ 0. Others

D2. Gender: □ 1. Male □ 0. Female

D3. Age: _____years

D4. What is the highest level of education you have obtained?

□ 1. No formal education
□ 2. Primary
□ 3. Secondary
□ 4. Technical Diploma
□ 5. Bachelor's Degree
□ 6. Master's Degree
□ 7. Other, specify _____

D5. What is your occupation?

□ 1. Civil servant
□ 2. Own business
□ 3. Employee of private firm
□ 4. Laborer
□ 5. Student
□ 6. Retired
□ 7. Other, specify _____

D6. Number of members in your household: _____people

D7. **Your** monthly income

0-2,500 Baht	1
2,501-5,000 Baht	2
5,001-7,500 Baht	3
7,501-10,000 Baht	4
10,001-15,000 Baht	5
15,001-20,000 Baht	6
20,001-25,000 Baht	7
25,001-50,000 Baht	8

D8. **Your household's** monthly income

0-2,500 Baht	1
2,501-5,000 Baht	2
5,001-7,500 Baht	3
7,501-10,000 Baht	4
10,001-15,000 Baht	5
15,001-20,000 Baht	6
20,001-25,000 Baht	7
25,001-50,000 Baht	8

50,001 Baht & above	9

50,001 Baht & above	9

D9. You consider your household's income as _____

□ 1. far above average

□ 2. somewhat above average

□ 3. about average

□ 4. somewhat below average

□ 5. far below average

D10. How much is your weekly expenditure? _____ Baht/week

D11. What is your **average** monthly utility expenditure?

Electric bill _____ Baht/month

Telephone bill _____ Baht/month

Water bill _____ Baht/month

D12. What kind of house do you live in?

□ 1-bedroom □ 3-bedroom

□ 2-bedroom □ 4- or more bedroom

D13. What is the tenancy status of your residence?

□ Bought with full ownership

Please specify: market value of land _____ Baht

market value of house _____ Baht

□ Rented (specify the rent) _____ Baht/month

□ Other (specify) _____

D14. Which of the following items does your household own?

Item	How many
Car (≤ 5 years old)	
Car (> 5 years old)	
Motorcycle	
Bicycle	
Television	
Refrigerator	
Radio	
Washing machine	
Microwave oven	
Air-conditioner	

♥ END OF INTERVIEW. THANK RESPONDENT♥

E. TO BE COMPLETED BY INTERVIEWER

E1. If the respondent answered 'YES' to the offered bid, compute the percentage of the offered bid to his income.

IF THE PERCENTAGE EXCEEDS 5%, THEN PROBE AS FOLLOWS:

Do you really vote **for** this referendum?

☐ YES

☐ NO

E2. Were other people present and listening-in when you interviewed this individual?

☐ YES

☐ NO

E3. Did the respondent have difficulty in understanding the questions in each section?

SECTION A

Not at all				Extreme Difficulty
1	2	3	4	5

SECTION B

Not at all				Extreme Difficulty
1	2	3	4	5

SECTION C

Not at all				Extreme Difficulty
1	2	3	4	5

SECTION D

Not at all				Extreme Difficulty
1	2	3	4	5

E4. Were any particular questions a problem for the respondent? Please note their number/s below.

_____

APPENDIX FIGURE 1. MAP SHOWING LOCATION OF HISTORIC TEMPLES IN THE CENTRAL REGION OF THAILAND

Karong Temple, Ayuttaya Province: Wall paintings are fading out.

Yaitakinaram Temple, Nakonnayok Province: Chapel is rundown.

APPENDIX FIGURE 2. PRESENT CONDITIONS OF TWO TEMPLES AT RISK

Amphawan Temple, Samut Songkram Province

APPENDIX FIGURE 3. A WELL-MAINTAINED TEMPLE IN AMPHAWA

CARD A – BACKGROUND INFORMATION ON TEMPLES AT RISK

The chapels as well as the antiques inside these temples include beautiful artwork and architecture from the end of the Sukhothai period (1300 A.D. – 1350 A.D.) to the early Ratanakosin period (1782 A.D. – 1832 A.D.). For example, the Bang Khae Yai Temple houses beautiful mural paintings depicting a story about the Thai-Burmese wars. These paintings, completed during the reign of King Rama II, are some of the most renowned in Thailand. Green, white, red, black, blue and brown colored powders and glues were used. The value of these paintings lies in the skill of the artists and the historical background.

CARD B – MANAGEMENT SCENARIOS

SCENARIO 'A': PRESENT STATE OF AFFAIRS – NO RESTORATION

- Having been exposed to the outdoor environment, these two temples are at risk of deterioration.
- Many wall paintings like the one in photo A are fading out. Some of the chapels have become run down.

SCENARIO 'B': PROPOSED MANAGEMENT PLAN – RESTORATION PROGRAM

1. A trust fund will be set up to finance preservation programs. It will be managed by the **Thailand Cultural Heritage Conservation Committee** who will be solely responsible for the maintenance and upkeep of the two temples at risk in the central region of Thailand.
2. The Restoration Program will:

- Improve the appearance of the temples. Chapels will be repaired and wall paintings restored.
- Ensure that these temples will continue to be cultural heritage for future generations.

CARD C – THE CHEAP TALK SCRIPT

In a recent study, several different groups of people voted on a referendum just like the one you are about to vote on. Payment was hypothetical for these groups, as it will be for you. No one would have to pay money for preservation programs if the referendum was passed. The results of these studies were that, on average across the groups, 45 percent of the respondents voted "yes" (to willingness to pay for the preservation program). With another set of groups of similar people voting on the same referendum, but where payment was real and people really did have to pay money if the referendum was passed, the results, on average across the groups, were that 30 percent voted "yes". This is quite a difference. We call this a "hypothetical bias." Hypothetical bias is the difference that we see in the way people respond to hypothetical referenda as compared to real referenda. How can we get people to think about their vote in a hypothetical referendum like they think in a real referendum, where if enough people vote "yes," they really have to pay money?

Let me tell you why I think that we consistently see this hypothetical bias. I think that when we hear about a referendum that involves doing something that is basically good (e.g. protecting animals, preserving cultural heritage, etc.) our basic reaction in a hypothetical situation is to think: "Of course, I would do this". But when the referendum is real, and we would have to spend our money if it is passed, we think differently. We basically would like to see good things happen, but when we are faced with the possibility of having to spend money, we think about our options: "If I spend money on this, that is money I no longer have to spend on other things." We vote in a way that takes into account the limited amount of money we have. This is just my opinion.

So, if I were in your shoes, I would ask myself: "If this were a real referendum, and I had to pay 100 Baht if the referendum is passed: do I <u>really want</u> to spend my money this way?" If I really did, I would vote "yes"; if I didn't, I would vote "no". In any case, I ask you to vote just exactly as you would vote if you were really going to face the consequences of your vote, which is to pay money if the proposition is passed.

CARD D1

Suppose that we were to have a referendum that everyone would pay a one-time donation of **<u>X</u>** Baht to the trust fund; and the interest on the endowment would be used to pay for the upkeep of **<u>two</u>** historic temples at risk into perpetuity.

If half or more than half of the people vote 'YES', then the referendum is passed and everyone has to pay **<u>X</u>** Baht. A contribution of **<u>NX</u>** Baht will be matched by seed funds from UNESCO. All the money received will be sent to the Thailand Cultural Heritage Conservation Committee. If more than half of the people vote 'NO', then no one pays **<u>X</u>** Baht and no money is sent to the Thailand Cultural Heritage Conservation Committee.

I want you to suppose that we are taking a secret vote. Do you vote for this referendum?

CARD D2

Suppose that we were to have a referendum that everyone would pay a one-time surcharge on income tax of **X** Baht to the trust fund. This fund is to be managed in perpetuity to ensure the maintenance and upkeep of **two** historic temples at risk. In effect, this would be a bequest by the current generation to future generations.

If half or more than half of the people vote 'YES', then the referendum is passed and next year, everyone pays an income tax surcharge of **X** Baht. A contribution of **NX** Baht will be matched by seed funds from UNESCO. All the money received will be sent to the Thailand Cultural Heritage Conservation Committee. If more than half of the people vote 'NO', then no one pays a surcharge of **X** Baht next year and no money is sent to the Thailand Cultural Heritage Conservation Committee.

I want you to suppose that we are taking a secret vote. Do you vote for this referendum?

CARD D3

Suppose that we were to have a referendum that everyone would pay a one-time donation of **X** Baht to the trust fund and the interest on the endowment would be used to pay for the upkeep of **ten** historic temples at risk into perpetuity.

If half or more than half of the people vote 'YES', then the referendum is passed and everyone pays **X** Baht. A contribution of **NX** Baht will be matched by seed funds from UNESCO. All the money received will be sent to the Thailand Cultural Heritage Conservation Committee. If more than half of the people vote 'NO', then no one pays a surcharge of **X** Baht next year and no money is sent to the Thailand Cultural Heritage Conservation Committee.

I want you to suppose that we are taking a secret vote. Do you vote for this referendum?

CARD D4

Suppose that we were to have a referendum that everyone would pay a one-time surcharge on income tax of **X** Baht to the trust fund. This fund is to be managed in perpetuity to ensure the maintenance and upkeep of **ten** historic temples at risk. In effect, this would be a bequest by the current generation to future generations.

If half or more than half of the people vote 'YES', then the referendum is passed and next year, everyone pays an income tax surcharge of **X** Baht. A contribution of **NX** Baht will be matched by seed funds from UNESCO. All the money received will be sent to the Thailand Cultural Heritage Conservation Committee. If more than half of the people vote 'NO', then no one pays a surcharge of **X** Baht next year and no money is sent to the Thailand Cultural Heritage Conservation Committee.

I want you to suppose that we are taking a secret vote. Do you vote for this referendum?